

## Complete Summary

### GUIDELINE TITLE

Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology.

### BIBLIOGRAPHIC SOURCE(S)

Thurman DJ, Stevens JA, Rao JK, Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter: Assessing patients in a neurology practice for risk of falls (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2008 Feb 5;70(6):473-9. [64 references] [PubMed](#)

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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## SCOPE

### DISEASE/CONDITION(S)

Neurologic or general conditions associated with an increased risk of falling, including:

- Muscle weakness
- Deficits in gait or balance
- Visual deficits
- Arthritis
- Impairments in activities of daily living
- Depression

- Cognitive impairment

## **GUIDELINE CATEGORY**

Risk Assessment  
Screening

## **CLINICAL SPECIALTY**

Family Practice  
Geriatrics  
Neurology  
Physical Medicine and Rehabilitation

## **INTENDED USERS**

Physical Therapists  
Physicians

## **GUIDELINE OBJECTIVE(S)**

To provide evidence-based recommendations for screening methods and assessments of risk for falls pertaining to patients likely to be seen in neurology practices

## **TARGET POPULATION**

Patients with neurological or other conditions rendering them at risk for falls

## **INTERVENTIONS AND PRACTICES CONSIDERED**

1. Screening and assessment for fall risk based on patient history and general risk factors for falls
2. A comprehensive standard neurologic examination, including an evaluation of cognition and vision
3. Screening measures:
  - Get-Up-And-Go Test (GUGT)
  - Timed Up-and-Go Test (TUG)
  - Assessment of ability to stand from a sitting position
  - Tinetti Mobility Scale
  - Self-reported disability
  - Dynamic Gait Index (DGI), Timed Gait, and Walking-While-Talking (WWT) Tests
  - Functional Reach Test (FRT)
  - Berg Balance Scale (BBS)
  - Elderly Mobility Scale (EMS)
  - Mobility Interaction Fall Chart (MIF)

## **MAJOR OUTCOMES CONSIDERED**

- Sensitivity, specificity, and predictive value of screening measures and tests for fall risk
- Risk of falls

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

For the literature review the National Library of Medicine MEDLINE database was searched for articles indexed under the search term (medical subject heading) "accidental falls" (or its subcategories) and under either 1) at least one of the terms "screening" or "functional testing" or "clinical evaluation," or 2) "nervous system diseases" (or its subcategories, which include specific diagnoses) and "epidemiologic methods" (or its subcategories). The search was limited to English-language articles published between January 1980 and January 2005. Key articles were also identified from comprehensive recent reviews of risk factors for falls found from this search and a search of the Cochrane Library.

Of the 193 potentially relevant citations retrieved by this search, 86 articles met criteria for relevance: 1) they measured non-syncopal falls as an outcome, and 2) they addressed specific neurologic risk factors or screening tools that could be easily applied in a clinical setting without special equipment.

### NUMBER OF SOURCE DOCUMENTS

86 articles met criteria for relevance

### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

#### Classification of Evidence for a Prognostic Intervention

**Class I** = Evidence provided by a prospective study of a broad spectrum of persons who may be at risk for developing the outcome (e.g., target disease, work status). The study measures the predictive ability using an independent gold standard for case definition. The predictor is measured in an evaluation that is masked to clinical presentation, and the outcome is measured in an evaluation that is masked to the presence of the predictor. All patients have the predictor and outcome variables measured.

**Class II** = Evidence provided by a prospective study of a narrow spectrum of persons at risk for having the condition, or by a retrospective study of a broad

spectrum of persons with the condition compared to a broad spectrum of controls. The study measures the prognostic accuracy of the risk factor using an acceptable independent gold standard for case definition. The risk factor is measured in an evaluation that is masked to the outcome.

**Class III** = Evidence provided by a retrospective study where either the persons with the condition or the controls are of a narrow spectrum. The study measures the predictive ability using an acceptable independent gold standard for case definition. The outcome, if not objective, is determined by someone other than the person who measured the predictor.

**Class IV** = Any design where the predictor is not applied in an independent evaluation OR evidence provided by expert opinion or case series without controls.

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review with Evidence Tables

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Reports were analyzed in full by at least two of the authors and rated according to the American Academy of Neurology (AAN) criteria for determining quality of evidence relating to prognosis or prediction of outcomes (see "Rating Scheme for the Strength of the Evidence"). A few articles received discordant ratings, resolved by consensus after discussions between the reviewers.

The review was limited to studies that address falls occurring without prior loss of consciousness and to studies where falls are analyzed as a principal outcome, rather than fall-related injuries. Information pertaining to 1) the nature of the risk factor and measurement of risk or 2) the screening test, its intended use, and its sensitivity, specificity, and predictive value, was extracted for articles rated as Class III or higher. Where at least two Class III—or one or more Class I or II—articles pertaining to a single risk factor or screening test were found, these were included in this practice parameter and in the evidence table available online.

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Other

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Conclusions and recommendations were made according to the American Academy of Neurology (AAN) criteria for translating the quality of prognostic evidence to recommendations.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

### **Classification of Recommendations**

The strength of practice recommendations is linked directly to the level of evidence:

**Level A** = Established as effective, ineffective, or harmful (or established as useful/predictive or not useful/predictive) for the given condition in the specified population. (Level A rating requires at least two consistent Class I studies\*)

**Level B** = Probably effective, ineffective or harmful (or probably useful/predictive or not useful/predictive) for the given condition in the specified population. (Level B rating requires at least one Class I study or two consistent Class II studies.)

**Level C** = Possibly effective, ineffective or harmful (or possibly useful/predictive or not useful/predictive) for the given condition in the specified population. (Level C rating requires at least one Class II study or two consistent Class III studies)

**Level U** = Data inadequate or conflicting; given current knowledge, treatment (test, predictor) is unproven. (Studies not meeting criteria for Class I–III).

\* In exceptional cases, one convincing Class I study may suffice for an "A" recommendation if 1) all criteria are met and/or 2) the magnitude of effect is large (relative rate improved outcome >5 and the lower limit of the confidence interval is >2).

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

External Peer Review  
Internal Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

Draft guidelines were reviewed for accuracy, quality, and thoroughness by the American Academy of Neurology (AAN) members, topic experts, and pertinent physician organizations.

The guidelines were approved by the Quality Standards Subcommittee on October 28, 2006; by the Practice Committee on July 16, 2007; by the Executive Committee on November 15, 2007; and by the AAN Board of Directors on December 6, 2007.

# **RECOMMENDATIONS**

## **MAJOR RECOMMENDATIONS**

Definitions of the levels of the recommendations (A, B, C, U) and classification of the evidence (Class I through Class IV) are provided at the end of the "Major Recommendations" field.

**Note from American Academy of Neurology (AAN):** Falls are generally defined as sudden, unintentional, and unexpected events that result in a person's coming to rest on the ground or at a lower level. Usually excluded from studies of the medical risks for falls are those that result from overwhelming environmental hazards (e.g., icy walkways) or unusual activities or events (e.g., playing sports or being shoved) that would place any person at high risk. While falls frequently follow loss of consciousness due to seizures or syncope, managing the risk of falling due to these conditions is distinct from that for most other falls and is usually considered in separate publications.

## Conclusions

- An increased risk of falls is established among persons with diagnoses of stroke, dementia, disorders of gait and balance, and those who use assistive devices to ambulate (**Level A**).
- An increased risk of falls is also probable among patients with Parkinson disease, peripheral neuropathy, lower extremity weakness or sensory loss, and substantial loss of vision (**Level B**).
- Other systematic, evidence-based reviews (not rated) of numerous studies have identified general risk factors for falls, including advanced age, age-associated frailty, arthritis, impairments in activities of daily living, depression, and the use of psychoactive medications including sedatives, antidepressants, and neuroleptics.
- As for screening measures that may predict or further assess fall risk, a history of recent falls is an established predictor of future falls (**Level A**).
- Additional screening instruments of probable value include the Get-Up-And-Go Test or Timed Up-and-Go Test, an assessment of ability to stand from a sitting position, and the Tinetti Mobility Scale (**Level B**). Other screening instruments of possible utility are described in appendix e-4 of the original guideline document (**Level C**).
- Some of these measures assess similar or overlapping neurologic functions—i.e., gait, mobility, and balance—and there is insufficient evidence to assess whether such measures offer benefits beyond that offered by a standard comprehensive neurologic examination.

## Recommendations

- All of the patients with any of the fall risk factors described above should be asked about falls during the past year (**Level A**).
- After a comprehensive standard neurologic examination, including an evaluation of cognition and vision, if further assessment of the extent of fall risk is needed, other screening measures to be considered include the Get-Up-And-Go Test or Timed Up-and-Go Test, an assessment of ability to stand unassisted from a sitting position, and the Tinetti Mobility Scale (**Level B**).
- Other screening measures of possible utility described in appendix e-4 of the original guideline document may be considered (**Level C**).

## Definitions:

## Classification of Recommendations

The strength of practice recommendations is linked directly to the level of evidence:

**Level A** = Established as effective, ineffective, or harmful (or established as useful/predictive or not useful/predictive) for the given condition in the specified population. (Level A rating requires at least two consistent Class I studies\*)

**Level B** = Probably effective, ineffective or harmful (or probably useful/predictive or not useful/predictive) for the given condition in the specified population. (Level B rating requires at least one Class I study or two consistent Class II studies.)

**Level C** = Possibly effective, ineffective or harmful (or possibly useful/predictive or not useful/predictive) for the given condition in the specified population. (Level C rating requires at least one Class II study or two consistent Class III studies)

**Level U** = Data inadequate or conflicting; given current knowledge, treatment (test, predictor) is unproven. (Studies not meeting criteria for Class I–III).

\* In exceptional cases, one convincing Class I study may suffice for an "A" recommendation if 1) all criteria are met and/or 2) the magnitude of effect is large (relative rate improved outcome >5 and the lower limit of the confidence interval is >2).

### **Classification of Evidence for a Prognostic Intervention**

**Class I** = Evidence provided by a prospective study of a broad spectrum of persons who may be at risk for developing the outcome (e.g., target disease, work status). The study measures the predictive ability using an independent gold standard for case definition. The predictor is measured in an evaluation that is masked to clinical presentation, and the outcome is measured in an evaluation that is masked to the presence of the predictor. All patients have the predictor and outcome variables measured.

**Class II** = Evidence provided by a prospective study of a narrow spectrum of persons at risk for having the condition, or by a retrospective study of a broad spectrum of persons with the condition compared to a broad spectrum of controls. The study measures the prognostic accuracy of the risk factor using an acceptable independent gold standard for case definition. The risk factor is measured in an evaluation that is masked to the outcome.

**Class III** = Evidence provided by a retrospective study where either the persons with the condition or the controls are of a narrow spectrum. The study measures the predictive ability using an acceptable independent gold standard for case definition. The outcome, if not objective, is determined by someone other than the person who measured the predictor.

**Class IV** = Any design where the predictor is not applied in an independent evaluation OR evidence provided by expert opinion or case series without controls.

### **CLINICAL ALGORITHM(S)**

None provided

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

Appropriate screening and assessment of patients for risk of falls

### POTENTIAL HARMS

Not stated

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

This statement is provided as an educational service of the American Academy of Neurology (AAN). It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved. The clinical context section is made available in order to place the evidence-based guideline(s) into perspective with current practice habits and challenges. No formal practice recommendations should be inferred.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

### IMPLEMENTATION TOOLS

Patient Resources  
Quick Reference Guides/Physician Guides  
Resources  
Slide Presentation  
Staff Training/Competency Material  
Wall Poster

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.



## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Staying Healthy

### IOM DOMAIN

Effectiveness  
Patient-centeredness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Thurman DJ, Stevens JA, Rao JK, Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter: Assessing patients in a neurology practice for risk of falls (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2008 Feb 5;70(6):473-9. [64 references] [PubMed](#)

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

2008 Feb 5

### GUIDELINE DEVELOPER(S)

American Academy of Neurology - Medical Specialty Society

### SOURCE(S) OF FUNDING

American Academy of Neurology (AAN)

### GUIDELINE COMMITTEE

Quality Standards Subcommittee

### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

*Primary Authors:* David J. Thurman, MD, MPH; Judy A. Stevens, PhD; Jaya K. Rao, MD, MHS

### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The American Academy of Neurology (AAN) is committed to producing independent, critical and truthful clinical practice guidelines (CPGs). Significant efforts are made to minimize the potential for conflicts of interest to influence the recommendations of this CPG. To the extent possible, the AAN keeps separate those who have a financial stake in the success or failure of the products appraised in the CPGs and the developers of the guidelines. Conflict of interest forms were obtained from all authors and reviewed by an oversight committee prior to project initiation. AAN limits the participation of authors with substantial conflicts of interest. The AAN forbids commercial participation in, or funding of, guideline projects. Drafts of the guidelines have been reviewed by at least three AAN committees, a network of neurologists, *Neurology* peer reviewers, and representatives from related fields. The AAN Guideline Author Conflict of Interest Policy can be viewed at [www.aan.com](http://www.aan.com).

The authors report no conflict of interest.

## **GUIDELINE STATUS**

This is the current release of the guideline.

## **GUIDELINE AVAILABILITY**

Electronic copies: A list of American Academy of Neurology (AAN) guidelines, along with a link to a Portable Document Format (PDF) file for this guideline, is available at the [AAN Web site](http://www.aan.com).

Print copies: Available from the AAN Member Services Center, (800) 879-1960, or from AAN, 1080 Montreal Avenue, St. Paul, MN 55116.

## **AVAILABILITY OF COMPANION DOCUMENTS**

The following are available:

- Assessing patients in a neurology practice for risk of falls. AAN summary of evidence-based guidelines for clinicians. St. Paul (MN): American Academy of Neurology. 2008. 2 p. Available from the [American Academy of Neurology Web site](http://www.aan.com).
- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Slide presentation. St. Paul (MN): American Academy of Neurology. 2008. 41 p. Available from the [AAN Web site](http://www.aan.com).
- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Case study and coding. St. Paul (MN): American Academy of Neurology. 2008. 5 p. Available from the [AAN Web site](http://www.aan.com).
- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Podcast. St. Paul (MN): American Academy of Neurology. 2008. Available from the [AAN Web site](http://www.aan.com).
- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Poster. St. Paul (MN): American Academy of Neurology. 2008. 1 p. Available from the [AAN Web site](http://www.aan.com).

- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Get-Up-and-Go Test. St. Paul (MN): American Academy of Neurology. 2008. 2 p. Available from the [AAN Web site](#).
- Practice parameter: assessing patients in a neurology practice for risk of falls (an evidence-based review). Timed Get-Up-and-Go Test. St. Paul (MN): American Academy of Neurology. 2008. 41 p. Available from the [AAN Web site](#).
- AAN guideline development process [online]. St. Paul (MN): American Academy of Neurology. Available from the [AAN Web site](#).

## **PATIENT RESOURCES**

The following is available:

- Assessing your risk for falls. AAN summary of evidence-based guideline for patients and their families. St. Paul (MN): American Academy of Neurology (AAN). 2008. 2 p.

Electronic copies: Available in Portable Document Format (PDF) from the [AAN Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

## **NGC STATUS**

This summary was completed by ECRI Institute on October 31, 2008. The information was verified by the guideline developer on December 30, 2008.

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